FAIRFAX COUNTY PARKWAY

FAIRFAX COUNTY, VIRGINIA

NOISE ANALYSIS

TECHNICAL REPORT

STATE PROJECT: R000-029-249, PE-108, C-514
PPMS 4700
FROM: ROLLING ROAD
TO: FULLERTON ROAD

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VIRGINIA DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL DIVISION
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I. Introduction

This study addresses the noise impacts from the proposed Fairfax County Parkway project beginning just south of the Franconia-Springfield Freeway and extending 1.9 miles to Fullerton Road. A location map is shown on Figure 1. The project is on new location and will be limited access along the entire project. More detail project plans are shown on Figures 2.1-2.5.

The proposed Fairfax County Parkway project will have three through lanes in each direction. A modified cloverleaf interchange will be located at Engineering Proving Grounds (EPG). Rolling Road will be relocated tying into Hooes Road that will be upgraded to 4 lanes. The northern half of the study area is residential and areas south and east of the EPG interchange are commercial and industrial land uses.

In addition to the build alternate, this study addresses existing and no-build alternatives. Federal guidelines establish certain noise level criteria for different land-uses. This noise technical study will document noise levels for all study cases and compare results to the Noise Abatement Criteria.

II. Summary

The study reveals that for the Design Year 2030 Build will result in 37 total project noise impacts, 36 impacts are residential and one church is impacted. Twenty-five (25) sites will be impacts only as the result of approaching or exceeding the Noise Abatement Criteria (NAC) of 67 decibels. Six sites will experience a substantial increase noise impact. Six sites will experience both types of impacts, exceeding the NAC and a substantial increase noise impact. A substantial increase is when the design year build noise level equals or exceeds the existing noise level by 10 dBA. Two churches were evaluated for noise within the project corridor. Only the Community Faith Tabernacle Baptist Church will experience exterior noise impact. A sound barrier will not be considered for the impacted church since the church has no exterior noise sensitive activities. The Harvester Presbyterian Church of America will not experience exterior noise impact. Neither church will experience interior noise impact. The Rolling Rock Park will not be noise impacted by the proposed project.

The existing year 2002 noise levels range from 48 dBA to 66 dBA, the design year 2030 no-build noise levels will range from 49 dBA to 66 dBA, and the design year 2030 build noise levels range from 58 dBA to 71 dBA. Table 2 is a summary listing of noise sites for each study area. A complete listing of noise levels for all sites evaluated is provided in Table 3 – Noise Levels, pages 19 through 22.

Various noise abatement measures have been considered to reduce or eliminate predicted

noise impacts. Six (6) sound barriers have been evaluated for mitigating noise impacts to residential properties along the project corridor. Therefore, based on a preliminary analysis, these sound walls appear to be feasible for construction. A more detailed evaluation will be necessary before a final feasible and reasonable determination can be made. The cost-effectiveness of sound barrier cannot be made at this time. The six sound barriers are considered under consideration and will be evaluated in the future. Additional information is located in this document and on VDOT's web site. Only the construction of sound barriers has been found to be a feasible means of mitigation. The cost-effectiveness of each barrier will be determined during the final barrier design stage. If a sound barrier exceeds the cost criteria, the barrier will require third party funding. When the effectiveness has been determined they will be posted on VDOTs web site. Third party funding commitments must be to VDOT in writing 90 days after web posting.

Third party funding can come from any source other than VDOT or FHWA. VDOT's cost-effectiveness ceiling is $30,000 per protected site. When a barrier cost exceeds this amount the difference will be considered third party funding requirement.

Construction noise impacts must also be considered and are addressed in the last section of this study.

III. Guidelines and Criteria

The noise impact of the proposed Fairfax County Parkway has been assessed in accordance with Federal Highway Administration (FHWA) guidelines published in Volume 7, Chapter 7, Section 2 of the Federal Aid Policy Guide (FAPG 7-7-2) and with the State Noise Abatement Policy. In order to determine the degree of impact of highway traffic noise on human activity, the Noise Abatement Criteria (NAC), Table 1, established by FAPG 7-7-2 is used. The NAC, listed in Table 1 for various activities, represent the upper limit of acceptable traffic noise conditions and also a balancing of that which may be desirable with that which may be achievable. The NAC applies to areas having regular human use and where lowered noise levels are desired. They do not apply to the entire tract of land on which the activity is based, but only to that portion where the activity takes place.

The NAC is given in terms of the hourly, A-weighted, equivalent sound level in decibels (dBA). The A-weighted sound level is a single number measure of sound intensity with weighted frequency characteristics that correspond to human subjective response to noise. However, since most environmental noise fluctuates from moment to moment, it is common practice to condense all of this information into a single number called the equivalent sound level (Leq). The Leq is the value of a steady sound level that would represent the same sound energy as the actual time-varying sound evaluated over the same time period. For highway traffic noise assessment, Leq is typically evaluated over a one-hour time period, and is denoted as Leq(h).

The noise impact assessment is made using the guidelines listed in Table 1. If, for a given activity, the design year noise levels "approach or exceed the NAC", then the activity is impacted and a series of abatement measures must be considered. Approach has been defined by VDOT as 1 decibel less than the NAC. There is another criterion for assessing impact provided in the Federal guidelines. A receptor can be noise impacted if the design year noise levels are substantially higher than existing levels. The VDOT State Noise Abatement Policy defines a substantial increase as 10 decibels or more, even though the levels may not reach the NAC. The final decision on whether or not to provide noise abatement along a project corridor will take into account the feasibility of the design and overall cost weighted against the environmental benefit.

TABLE 1
FHWA NOISE ABATEMENT CRITERIA

Activity Category	Leq(h)	Description Of Activity Category
A	57 **(Exterior)**	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 **(Exterior)**	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 **(Exterior)**	Developed land, properties or activities not included in Categories A or B above.
D	---	Undeveloped lands.
E	52 **(Interior)**	Residences, motels, hotels, public meeting Rooms, schools, churches, libraries, Hospitals and auditoriums.

IV. Methods

Impact assessment has been performed for all residential areas (neighborhoods/ communities/developments), 2 churches, and a park within the Fairfax County Parkway project corridor. These areas are listed in Table 2 and shown on Figures 1 and 2.1 through 2.5.

Noise levels in these areas have been determined for the existing (2002) conditions, the design year (2030) no-build conditions, and the design year (2030) build conditions. Levels have been predicted for that hour of the day when the vehicle volume, operating speed, and number of heavy trucks (vehicles with 3 or more axles) combine to produce the worst noise conditions. The worst noise hour used in this study was 8-9 a.m.

A review of the Fairfax County Parkway project corridor has established highway traffic as the dominant source of noise for the build alternative. Since highway noise can be determined accurately through computer modeling techniques, monitoring of existing noise levels was only taken at one location. A site was chosen in Barkers Village away from the proposed project on Barkers Court (See Figure 2.1). Existing noise reading was taken using a CEL Instruments Ltd. Model Number CEL-593 using calibrator Model CEL-284/2. The existing noise level was determined to be 50 dBA. In areas that are dominated by traffic noise both existing and design year traffic noise calculations have been performed using the Federal Highway Administration's Traffic Noise Model, FHWA TNM® 2.1, February 2003 was developed and sponsored by the U.S. Department of Transportation and John A. Volpe National Transportation Systems Center, Acoustics facility. TNM accounts for such factors as ground absorption, roadway geometry, receptor distance, shielding from local terrain and structures, vehicle volume, operating speed, and volume of autos, medium and heavy trucks.

Assessment of traffic noise impact requires three comparisons:

(1) The noise levels under existing conditions must be compared to those under build conditions. This comparison shows the change in noise level that will occur between the present time and the design year if the project is constructed.

(2) The noise levels under design year no-build conditions must be compared to those under build conditions. This comparison shows how much of the change in levels can actually be attributed to the proposed project.

(3) The noise levels under build conditions must be compared to the applicable NAC. This comparison determines the compatibility of noise levels under build conditions and present land use.

The noise prediction results are summarized in Table 2. Included for each study area are the applicable NAC and the highest hourly equivalent sound level for the existing, no-build, and build conditions. All noise study sites levels are listed in the Table 3.

TABLE 2
STUDY AREA LOCATIONS AND RESULTS

COMMUNITY/LOCATION DESCRIPTION	HIGHEST HOURLY EQUIVALENT SOUND LEVEL $L_{eq}(h)$			
	FHWA NAC	2002 EXISTING	2030 NO-BUILD	2030 BUILD
Single Family Residence east side of FCP on old Hooes Road; Represents Sites 1, 2, 7, 8, 12, 13, 14 in Barkers Village Subdivision; Site 1, Figure 2.2	67	64	65	71
Single family residence eastside of relocated Rolling Road; Represents Sites PH1-PH7 in Presidential Hills Subdivision; Site PH4, Figure 2.2	67	54	55	65
Town homes east of relocated Rolling Road; Represents Sites PH8-PH11 in Presidential Hills Subdivision; Site PH8, Figure 2.2	67	48	49	67
Residence south of Ramp D along DeAment Court; Represents sites 24-24D adjacent to existing FCP in Spring Woods Town homes; Site 24, Figure 2.2	67	66	66	68
Residence west of FCP, along Spring Tree Drive; Represent sites 25 – 35 in Spring Woods Town homes; Site 29, Figure 2.2	67	59	59	65
Single Family Residence west of FCP on Old Rolling Road; Represents Sites 36-37 Site 36, Figure 2.2	67	61	62	70
Residence west of FCP, along Jiri Woods Court and Bethelen Woods Lane; Represents sites 40-50 in Bethelen Woods Town Homes; Site 46, Figure 2.2	67	59	60	63
Single Family Residence west of FCP on Old Rolling Road and Chancellor Way, Chancelor Farms Sites 51-57, Site 52; Figure 2.3	67	60	60	62
Community Faith Tabernacle Baptist east of FCP on Rolling Road; Site 58, Figure 2.3	67 Exterior 52 Interior	60 Ext. 40 Int.	61 Ext. 41 Int.	66 Ext. 46 Int.
Rolling Wood Park Recreational Facility Site 60, Figure 2.3	67	56	56	59
Single Family Residence west of FCP, Represents properties adjacent to Rolling Road in Saratoga and Rolling Green subdivisions; Site 73, Figure 2.3	67	64	64	68
Harvester Pres. Church along rolling Road, SW of EPG Interchange, Site 89; Figure 2.3	67 Exterior 52 Interior	53 Ext. 33 Int.	53 Ext. 33 Int.	60 Ext. 40 Int.

V. Impact Assessment

The results of the impact assessment indicate that the Fairfax County Parkway project

will have an affect on noise levels in the project corridor. There will be 37 properties along Fairfax County Parkway impacted, 36 residential and one public use facility. Noise levels at 25 of the impacts will approach or exceed the 67-decibel NAC. Six sites will experience a substantial increase impact and six sites will experience both types of noise impacts. Design year 2030 build levels will range from 58 to 71 decibels, no-build 2030 from 49 to 66 decibels and the 2002 existing will range from 48 to 66 dBA. See the TABLE 3 – Noise Levels for a complete listing of existing, no-build and build noise levels for all sites studied.

A. Residential Impacts

The list shown below indicates the total residential impacts that will be expected in the design year build from the Fairfax County Parkway project. Each residential area is discussed.

- **Barkers Village, Sites 1-23, (Photo 1 and Figures 2.1)**

This is a subdivision with 22 single family homes located east of the project and south of Hooes Road. Site 23 is adjacent to the subdivision and will be included in this discussion. Twelve sites will experience noise impacts. Eight sites will experience design year build noise levels of 66 decibels or higher. Site 16 will experience a substantial increase impact. Sites 12, 15 and 17 will experience both types of impacts. The 2030 build design year noise level will range from 61 to 71 dBA. The 2030 no-build will range from 50 to 65 dBA. The 2002 existing noise level ranges from 50 to 64 dBA.

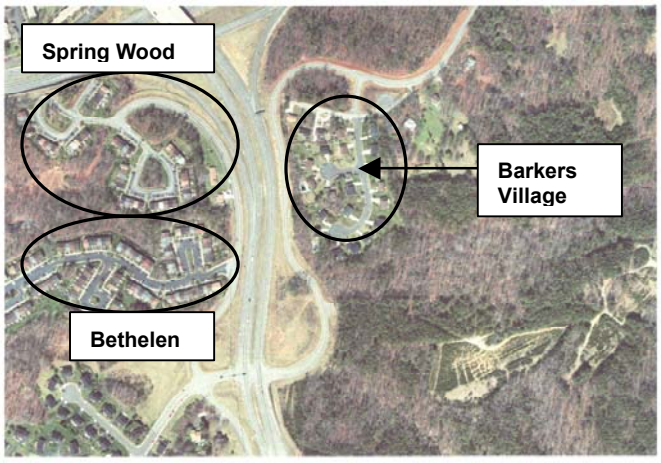

Photo 1, Barkers Village, Spring Woods and Bethelen

- **Presidential Hills, Sites PH1 – PH11, (Figure 2.1)**

This area is mostly single-family residential homes. Town homes are located in the southwest section adjacent to relocated Rolling Road. A total of 8 residential sites in Presidential Hills will be noise impacted in the 2030 build design year. Sites PH6, PH 8 and PH9 will experience both types of noise impacts. Sites PH4, PH5, PH7, PH10 and PH11 will experience a substantial noise increase impact. The 2030 build design year noise level will range from 62 to 67 dBA. The 2030 no-build will range from 49 to 63 dBA. The 2002 existing noise level ranges from 48 to 62 dBA.

- **Spring Woods Townhouses, Sites 24-35, (Figure 2.1)**

This area is residential townhouses west and south of Fairfax County Parkway. Four Townhouses, Sites 24, 24A, 24B, and 24C in Spring Woods are noise impacted. The 2030 build design year noise level will range from 63 to 68 dBA. The 2030 no-build will range from 58 to 66 dBA. The 2002 existing noise level ranges from 57 to 66 dBA.

- **Two Homes on Existing Rolling Road, Sites 36-37, (Photo 2 and Figure 2.1)**

Two single-family dwellings, Sites 36 and 37 are noise impacted. The homes are located west of Fairfax County Parkway. The 2030 build design year noise level will be 70 dBA at both sites. The 2030 no-build will range from 61 to 62 dBA. The 2002 existing noise level will range from 60 to 61 dBA.

Photo 2, Sites 38 and 37

- **Bethelen Woods Townhouses, Sites 38-50, (Photo 1 and Figure 2.1)**

This area is residential townhouses located west of Fairfax County Parkway. Bethelen Woods Townhouses are not noise impacted by the proposed project. The 2030 build design year noise level will range from 62 to 63 dBA. The 2030 no-build will range from 57 to 60 dBA. The 2002 existing noise level ranges from 57 to 59 dBA.

- **Chancelor Farm, Sites 51-57, (Figure 2.2)**

This area is single-family residential subdivision. No homes in Chancelor Farms are noise impacted by the proposed project. The 2030 build design year noise level will range from 58 to 62 dBA. The 2030 no-build will range from 54 to 60 dBA. The 2002 existing noise level ranges from 54 to 60 dBA.

- **Saratoga, Sites 61-83, (Figures 2.2 and 2.3)**

This is a large subdivision consisting of single-family residential homes located west of the proposed EPG Interchange. This area has ten residential homes that will experience design year build noise levels of 66 decibels or higher. No sites in Saratoga will experience a substantial noise increase. The 2030 build design year noise level will range from 61 to 69 dBA. The 2030 no-build will range from 54 to 65 dBA. The 2002 existing noise level ranges from 53 to 65 dBA.

- **Rolling Green, Sites 84-87, Figure 2.3)**

This area is single-family residential subdivision. No homes in Rolling Green are noise impacted by the proposed project. The 2030 build design year noise level will range from 62 to 65 dBA. The 2030 no-build will range from 57 to 64 dBA. The 2002 existing noise level ranges from 57 to 64 dBA.

B. Churches, Children Play Area and Parks

There are 2 churches, one with adjacent children's play area and one park within the project corridor. Only the Community Faith Baptist Church will experience an exterior noise level that will approach or exceed the NAC. The Harvester Presbyterian Church of America and adjacent play area and the Rollingwood Park are below the 67 dBA NAC criteria. Both churches are air-conditioned, allowing for closed window conditions year round and resulting in noise levels that will not approach or exceed the interior NAC, Category E. No church or park in the project corridor will experience a substantial noise increase impact.

- **Community of Faith Tabernacle Baptist Church, Sites 58 (Photo 3 and Figure 2.2)**

The Community of Faith Tabernacle Baptist Church will be impacted by noise from the proposed Fairfax County Parkway project. Site 58 will experience an exterior noise level of 66 dBA in the 2030 design year build. The 2030 no-build will be 61 dBA and the 2002 existing year is 60 dBA. The church is air conditioned, and will experience an interior design year 2030 noise level of 46 dBA. The interior 2030 no-build is 41 dBA and the interior 2002 existing is 40 dBA. There are no outside recreational activities near Site 58.

Photo 3, Faith Tabernacle Baptist Church

- **Rollingwood Park, Sites 59 and 60 (Photos 4 and 5, Figure 2.2)**

Two sites were chosen in the park for study. Site 59 is the basketball court and Site 60 is the tennis court. Neither site is noise impacted in the 2030 build design year. The basketball courts, Site 59 will experience a design year 2030 build noise level of 58 dBA, a design year 2030 no-build noise level of 51 dBA, and a 2002 existing noise level of 51 dBA. The tennis courts, Site 60 will experience a design year 2030 build noise level of 59 dBA, a design year 2030 no-build noise level of 56 dBA, and a 2002 existing noise level of 56 dBA.

Photo 4, Basketball Court - Site 59

Photo 5, Tennis Courts - Site 60

- **Children's Play Area, Site 88 (Photo 6 and Figure 2.3)**

The children's play area is adjacent to the Harvester Presbyterian Church of America. The children's play area is not impacted by noise from the proposed Fairfax County Parkway project. Site 88 will experience a design year 2030 build noise level of 60 dBA, a design year 2030 no-build noise level of 55 dBA, and a 2002 existing noise level of 55 dBA.

Photo 6, Children Play Area - Site 88

- **Harvester Presbyterian Church of America, Sites 89 (Photo 7 and Figure 2.3)**

The Harvester Presbyterian Church of America will not be impacted by noise from the Fairfax County Parkway project. Site 89 will experience an exterior noise level of 60 dBA in the 2030 design year build. The 2030 no-build will be 53 dBA and the 2002 existing year is 53 dBA. Site 89, is air conditioned, and will experience an interior build design year 2030 noise level of 40 decibels. The interior design year 2030 no-build noise level will be 33 decibels, and the interior 2002 existing noise level is 33 decibels.

Photo 7, Harvester Presbyterian Church Site 89

VI. Noise Contours

Noise contours are lines of equal noise exposure that parallel the roadway noise source, and diminish in intensity with distance. The location of the 66 dBA noise contour was determined for areas along the Fairfax County Parkway for the purpose of characterizing the noise environment in the study area. Table 5 shows the approximate distances between the roadway centerline and the 66 dBA noise contour for the proposed project. Any noise sensitive property within the 66 dBA contour, should be considered noise impacted if no sound barrier is present to reduce noise levels.

TABLE 5 *

DISTANCE TO 66 dBA NOISE CONTOUR FROM CENTERLINE OF ROADWAY (FEET)

Representative Area	**2030 Build Alternative**
Barkers Village	165’ to centerline of Fairfax Co. Parkway
Spring Woods	165’ to centerline of Fairfax Co. Parkway
Bethelen Woods	165’ to centerline of Fairfax Co. Parkway
Chancelor Farms	100’ to centerline of Rolling Road
Rollingwood Park	100’ to centerline of Rolling Road
EPG (Fort Belvoir Military Reservation)	165’ to centerline of Fairfax Co. Parkway
Saratoga and Presidential Hills	100’ to centerline of Rolling Road

* Noise contours account for traffic-related highway noise only.

VII. Noise Abatement

Noise abatement measures typically considered when noise impacts are predicted to occur include: alteration of vertical or horizontal alignments, management of traffic, construction of sound barriers, and acoustical insulation of public use and non-profit facilities.

There are no known future developments in the Fairfax County Parkway corridor that qualify for sound barrier consideration. This includes the Fort Belvoir Engineering Proving Grounds (EPG) adjacent to the proposed project. Planning decision by the Army and Fairfax County has yet to be made concerning future land use of EPG. For VDOT to consider sound barriers for undeveloped land the development must be planned, scheduled and approved by Fairfax County prior to the date the Commonwealth Transportation Board adopts the design of this project. Further, in accordance with the State Noise Abatement Policy, a sound barrier for a proposed development will not be constructed until the portion of the development to be protected by the barrier has been completed to the satisfaction of the VDOT.

A. Alignment Modification and Traffic Management

The alteration of vertical alignment has been considered to reduce or eliminate the impacts created by the Fairfax County Parkway project; however, this is not practical, as deep cuts will be necessary to eliminate noise impacts. Deep cuts will require additional right of way. Shifting the horizontal alignment is not a cost-effective option to eliminate noise impacts.

Traffic management measures that have been considered in conjunction with this project include reduced speeds and truck restrictions. Neither measure is practical since this will be a limited access corridor. Also, reducing speeds will not be an effective noise mitigation measure since a substantial decrease in speed is necessary to provide adequate noise reduction.

B. Sound Barriers

The construction of sound barriers has been considered at all impacted locations within the project corridor. To be effective, a sound barrier must be continuous and not have openings for access. Barriers have been designed using FHWA TNM® 2.1, February 2003, and currently appear to be feasible. A feasible barrier means that it provides at least 5 dBA of reduction and can be constructed to avoid engineering, safety, and utility conflicts. Should any barrier exceed the State Noise Abatement Policy cost-effectiveness criteria then third party funding will be required for the barrier to continue towards construction. Third party funding can come from any source other than VDOT or FHWA. VDOT's cost-effectiveness ceiling is $30,000 per protected site. When a barrier cost exceeds this amount the difference will be considered third party.

The determination of a barrier's cost effectiveness will be based on the following:

For residential properties, a barrier is cost effective when the cost does not exceed $30,000 per protected or benefited residential unit.

A property is considered protected when it receives a noise reduction of at least 5 decibels.

Should a non-impacted property receive 5 decibels or more noise reduction from an abatement measure then the property will be considered benefited and be included in the cost-effectiveness determination.

For non-residential properties such as parks and churches, the determination is based on cost, severity of impact (both in terms of noise levels and the size of the impacted area, time of use, and the activity it contains), and amount of noise reduction.

Six sound barriers (shown on Figures 2.1-2.3) appear feasible and will be evaluated for the final environmental document. Before final decisions and approvals can be made to construct a sound barrier, a detailed evaluation will be performed and input from the impacted properties owners must be obtained. All feasible sound barriers will be reviewed by the joint VDOT/FHWA Noise Abatement Committee, which will make recommendation to the Chief Engineer for approval. All approved barriers will be incorporated into the road project plans.

Results of the sound barrier evaluation are discussed for each impacted area in the following paragraphs.

- **Barkers Village, East Side of Fairfax County Parkway**
  Barrier 1, Sites 1-22, Figure 2.1

Barrier 1 would protect 14 sites, 12 impacted and 2 benefited residential properties. The barrier will provide 5 to 11 decibels of noise reduction. The barrier will be 1400 feet in length and range in height from 6 to 17 feet. The barrier will protect impacted sites adjacent to the Fairfax County Parkway and substantial increase impacts resulting from the new location of Rolling Road near home on Barkers Court, Sites 15, 16 and 17. Barrier 1 is considered feasible and will be given further consideration to be included in the road plans.

- **West Side of Fairfax County Parkway**
  Barrier 2, Sites 36 and 37, Figure 2.1

Barrier 2 will protect 2 impacted sites, Sites 36 and 37 adjacent to old Rolling Road. The barrier will provide 5 decibels of noise reduction for Site 36 and 6 decibels for Site 37. Barrier 2 is 600 feet in length and 13 feet in height. Barrier 2 is considered feasible and will be given further consideration to be included in the road plans.

- **Saratoga, West Side of Fairfax County Parkway**
  Barrier 3, Sites 61 and 73, Figures 2.2 and 2.3

Barrier 3 will protect 6 impacted sites and benefit 7 sites. The barrier will provide to 5 to 12 decibels of noise reduction. The barrier is located on the west side of existing Rolling Road protecting part of Saratoga Subdivision from road noise of proposed project and existing Rolling Road. Barrier 3 is 900 feet in length and range in height from 10 to 16 feet. Barrier 3 is considered feasible and will be given further consideration to be included in the roads plans.

- **Saratoga and Rolling Green, West Side of Fairfax County Parkway**
  Barrier 4, Sites 74 and 87, Figure 2.3

Barrier 4 will protect 4 impacted sites and benefit 4 sites. The barrier will provide 5 to 11 decibels of noise reduction. The barriers are located on the west side of existing Rolling Road protecting part of Saratoga Subdivision from road noise of proposed project and existing Rolling Road. Barrier 4 is 600 feet and with a height of 13 feet. Barrier 4 is considered feasible and will be given further consideration to be included in the roads plans.

- **Presidential Hills, East of Relocated Rolling Road**
  Barrier 5, Sites PH1 – PH11, Figure 2.1

Barrier 5 will protect 8 impacted sites. The barrier will provide 5 to 9 decibels of noise reduction. The barrier will be located on the east side of relocated Rolling Road. Total length of the barrier is 750 feet and with a height range from 9 to 12 feet. No access for Rose Garden Lane should be provided to relocated Rolling Road; this will enhance the sound barrier effectiveness. Barrier 5 is considered feasible and will be given further consideration to be included in the roads plans.

- **Spring Woods Townhouses, South of Fairfax County Parkway**
  Barrier 6, Sites 24-24D, Figure 2.1

Barrier 6 will protect 4 impacted sites. The barrier will provide 5 to 6 decibels of noise reduction. The barrier will be located on top of an existing retaining wall and continue alone Ramp D protecting sites on DeArment Court. Barrier 6 is 440 feet in length and range in height from 6 to 14 feet. Barrier 6 is considered feasible and will be given further consideration to be included in the roads plans.

VIII. Construction Noise

Land uses that will be sensitive to traffic noise will also be sensitive to construction noise. A method of controlling construction noise is to establish the maximum level of noise that construction operations can generate. In view of this, VDOT has developed and FHWA has approved a specification that establishes construction noise limits. This specification can be found in VDOT's *January 2002 Road and Bridge Specifications, Section 107.14(b.3), "Noise"*. The contractor will be required to conform to this specification to reduce the impact of construction noise on the surrounding community.

TABLE 3 – Noise Levels

SITE NO.	LOCATION AND DESCRIPTION	2002 EXIST Leq	2030 NO-BUILD Leq	2030 BUILD No-WALL Leq	2030 BUILD WALL Leq	INSERTION LOSS dB(A)	IMPACTED (Y/N)	Type Impact
1	Old Hooes Rd., Residence	64	65	71	62	9	Y	>= 66 dBA
2	Old Hooes Rd., Residence	63	64	70	61	9	Y	>= 66 dBA
3	Old Hooes Rd., Residence	61	61	68	60	8	Y	>= 66 dBA
4	Old Hooes Rd., Residence	58	59	65	62	3	N	
5	Barkers Court, Residence	56	57	63	58	5	N	
6	Cyrll Place, Residence	62	62	68	60	8	Y	>= 66 dBA
7	Cyrll Place, Residence	63	64	70	59	11	Y	>= 66 dBA
8	Cyrll Place, Residence	63	64	69	59	10	Y	>= 66 dBA
9	Cyrll Place, Residence	57	58	65	58	7	N	
10	Barkers Court, Residence	51	53	60	56	4	N	
11	Barkers Court, Residence	52	54	61	57	4	N	
12	Barkers Court, Residence	59	60	69	58	11	Y	Both
13	Barkers Court, Residence	60	61	69	59	10	Y	>= 66 dBA
14	Barkers Court, Residence	60	62	68	58	10	Y	>= 66 dBA
15	Barkers Court, Residence	52	53	67	58	9	Y	Both
16	Barkers Court, Residence	50	51	64	58	6	Y	Sub'l Inc.
17	Barkers Court, Residence	50	50	66	60	6	Y	Both
18	Barkers Court, Residence	50	50	59	56	3	N	
19	Barkers Court, Residence	50	51	59	57	3	N	
20	Barkers Court, Residence	52	53	60	57	3	N	
21	Barkers Court, Residence	55	55	61	59	2	N	
22	Barkers Court, Residence	57	57	63	61	2	N	
23	Old Hooes Road, Residence	58	59	64	64	1	N	
PH1	Presidential Hills, Residence	62	63	63	63	0	N	
PH2	Presidential Hills, Residence	57	58	62	62	0	N	
PH3	Presidential Hills, Residence	54	56	63	60	3	N	
PH4	Presidential Hills, Residence	54	55	65	60	5	Y	Sub'l Inc.
PH5	Presidential Hills, Residence	51	52	65	59	6	Y	Sub'l Inc.
PH6	Presidential Hills, Residence	50	50	66	58	8	Y	Both
PH7	Presidential Hills, Residence	48	49	65	58	7	Y	Sub'l Inc.
PH8	Presidential Hills, Townhouse	48	49	67	58	9	Y	Both
PH9	Presidential Hills, Townhouse	48	49	66	58	8	Y	Both
PH10	Presidential Hills, Townhouse	48	49	65	57	8	Y	Sub'l Inc.
PH11	Presidential Hills, Townhouse	48	49	64	58	6	Y	Sub'l Inc.
24	Spring Woods, Townhouse	66	66	68	63	5	Y	>= 66 dBA

TABLE 3 - Noise Levels (Continued)

SITE NO.	LOCATION AND DESCRIPTION	2002 EXIST Leq	2030 NO-BUILD Leq	2030 BUILD No-WALL Leq	2030 BUILD WALL Leq	INSERTION LOSS dB(A)	IMPACTED (Y/N)	Type Impact
24A	Spring Woods, Townhouse	64	64	67	62	5	Y	>= 66 dBA
24B	Spring Woods, Townhouse	63	63	66	61	5	Y	>= 66 dBA
24C	Spring Woods, Townhouse	63	63	66	61	5	Y	>= 66 dBA
24D	Spring Woods, Townhouse	62	62	65	61	4	N	
25	Spring Woods, Townhouse	57	58	63	62	2	N	
26	Spring Woods, Townhouse	58	58	64	62	2	N	
27	Spring Woods, Townhouse	58	58	64	62	2	N	
28	Spring Woods, Townhouse	58	59	64	62	2	N	
29	Spring Woods, Townhouse	59	59	65	62	3	N	
30	Spring Woods, Townhouse	59	59	65	62	3	N	
31	Spring Woods, Townhouse	58	59	65	62	3	N	
32	Spring Woods, Townhouse	58	58	65	62	3	N	
33	Spring Woods, Townhouse	57	58	65	61	4	N	
34	Spring Woods, Townhouse	57	58	65	61	4	N	
35	Spring Woods, Townhouse	57	58	65	62	3	N	
36	Rolling Road, Residence	61	62	70	65	5	Y	>= 66 dBA
37	Rolling Road, Residence	60	61	70	64	6	Y	>= 66 dBA
38	Bethelen Woods, Townhouse	57	58	63	60	3	N	
39	Bethelen Woods, Townhouse	57	57	62	60	2	N	
40	Bethelen Woods, Townhouse	57	58	62	60	2	N	
41	Bethelen Woods, Townhouse	57	58	62	60	2	N	
42	Bethelen Woods, Townhouse	57	58	62	60	2	N	
43	Bethelen Woods, Townhouse	57	58	62	60	2	N	
44	Bethelen Woods, Townhouse	58	58	62	60	2	N	
45	Bethelen Woods, Townhouse	58	59	62	61	1	N	
46	Bethelen Woods, Townhouse	59	60	63	62	1	N	
47	Bethelen Woods, Townhouse	59	60	63	62	1	N	
48	Bethelen Woods, Townhouse	58	59	62	61	1	N	
49	Bethelen Woods, Townhouse	58	59	62	61	1	N	
50	Bethelen Woods, Townhouse	57	58	62	61	1	N	
51	Rolling Road, Residence	59	60	62	62	0	N	
52	Rolling Road, Residence	60	60	62	62	0	N	
53	Rolling Road, Residence	54	54	58	58	0	N	
54	Chancellor Way, Residence	55	56	60	60	0	N	
55	Chancellor Way, Residence	54	55	58	58	0	N	

TABLE 3 - Noise Levels (Continued)

SITE NO.	LOCATION AND DESCRIPTION	2002 EXIST Leq	2030 NO-BUILD Leq	2030 BUILD No-WALL Leq	2030 BUILD WALL Leq	INSERTION LOSS dB(A)	IMPACTED (Y/N)	Type Impact
56	Chancellor Way, Residence	58	58	62	62	0	N	
57	Chancellor Way, Residence	57	57	62	62	0	N	
58 *	Comm. Faith Tabernacle Bpt. Ch.	60 Ext.	61 Ext.	66 Ext.	66 Ext.	0	Y	>= 66 dBA
58A	Comm. Faith Tabernacle Bpt .Ch.	40 Int.	41 Int.	46 Int.	46 Int.	0	N	
59	Rollingwood Park, Basketball Ct.	51	51	58	58	0	N	
60	Rollingwood Park, Tennis Ct.	56	56	59	59	0	N	
61	Ballston Drive, Residence	55	55	63	57	6	N	
62	Ballston Drive, Residence	61	60	65	58	7	N	
63	Ballston Drive, Residence	64	63	68	57	11	Y	>= 66 dBA
64	Ballston Drive, Residence	62	62	66	56	10	Y	>= 66 dBA
65	Ballston Drive, Residence	57	57	63	57	6	N	
66	Ballston Court, Residence	58	58	64	57	7	N	
67	Ballston Court, Residence	63	63	67	57	10	Y	>= 66 dBA
68	Ballston Court, Residence	65	65	69	57	12	Y	>= 66 dBA
69	Ballston Court, Residence	63	63	68	57	11	Y	>= 66 dBA
70	Ballston Court, Residence	57	57	63	57	6	N	
71	Richfield Road, Residence	54	54	62	57	5	N	
72	Richfield Road, Residence	57	57	64	59	5	N	
73	Richfield Road, Residence	64	64	68	61	7	Y	>= 66 dBA
74	Richfield Road, Residence	63	63	68	63	5	Y	>= 66 dBA
75	Richfield Road, Residence	57	57	63	60	3	N	
76	Richfield Road, Residence	53	54	61	57	4	N	
77	Tangler Drive, Residence	53	54	61	57	4	N	
78	Tangler Drive, Residence	56	56	63	57	6	N	
79	Tangler Drive, Residence	60	60	66	57	8	Y	>= 66 dBA
80	Tangler Drive, Residence	64	64	68	58	10	Y	>= 66 dBA
81	Tangler Drive, Residence	64	63	67	56	11	Y	>= 66 dBA
82	Tangler Drive, Residence	56	56	63	57	6	N	
83	Tangler Drive, Residence	53	54	62	56	6	N	
84	O'Dell Court, Residence	63	63	65	57	8	N	
85	O'Dell Court, Residence	57	57	62	60	2	N	
86	Rolling Road, Residence	64	64	65	65	0	N	
87	O'Dell Street, Residence	60	60	64	64	0	N	
88	Children's Play Area	55	55	60	60	0	N	
89	Harvester Pres. Church of Amer.	53 Ext.	53 Ext.	60 Ext.	60 Ext.	0	N	
89A	Harvester Pres. Church of Amer.	33 Int.	33 Int.	40 Int.	40 Int.	0	N	

TABLE 3 - Noise Levels (Continued)

TOTAL RESIDENTIAL IMPACTS >= 66dBA Only	24
TOTAL RESIDENTIAL SUBSTANTIAL INCREASE IMPACTS	6
TOTAL RESIDENTIAL WITH BOTH IMPACT TYPES	6
CHURCH IMPACT (Exterior Only) >= 66 dBA	1
TOTAL IMPACTS	37
TOTAL IMPACTS AND PROTECTED	36
TOTAL BENIFITED SITES	13

- Site 58, the Community Faith Tabernacle Baptist Church has no exterior noise sensitive activities.

Benefited sites are not impacted but receive 5 dBA or greater noise reduction from sound barriers.

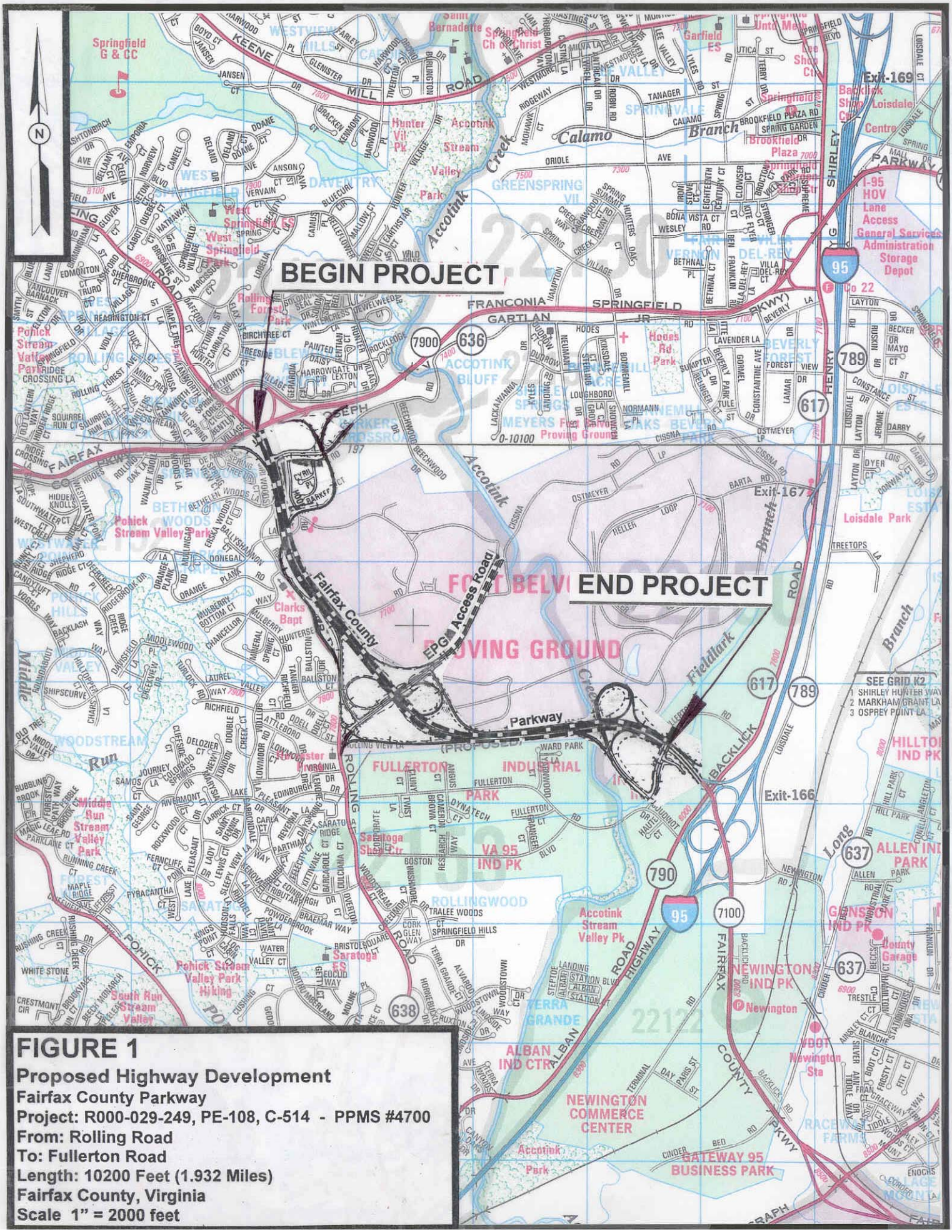

FIGURE 1

Proposed Highway Development
Fairfax County Parkway
Project: R000-029-249, PE-108, C-514 - PPMS #4700
From: Rolling Road
To: Fullerton Road
Length: 10200 Feet (1.932 Miles)
Fairfax County, Virginia
Scale 1" = 2000 feet